

Remarks

Applicant requests reconsideration and allowance of the pending claims in light of the foregoing amendments and following remarks.

Claims 1-15, 17-22, 24, 25, and 27-34 remain pending in the application. Claims 1, 8, 18, 25, and 30 are independent. Claims 30-34 are amended. No new matter is added.

Claims 1-15, 17-22, 24, 25, and 27-34 are rejected. These rejections are respectfully traversed.

Request for Examiner Interview if Any Issues Remain

If any issues remain after entry of the present Amendment, Applicant formally requests that the Examiner contact the undersigned *before issuing the next Office Action* to arrange a telephonic interview pursuant to MPEP § 713.01.

The 35 U.S.C. § 101 Rejections of Claims 30-34 Should be Withdrawn

The Office Action ("Action") rejects claims 30-34 under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Applicant traverses these rejections. Claims 30-34 are now directed to "[a] non-transitory machine-readable medium encoded with instructions." Accordingly, the 35 U.S.C. § 101 rejections of independent claim 30 and its dependent claims 31-34 should be withdrawn and such action is respectfully requested.

Claims 1-7 are Patentable over Shenoy, Hartmann, and Markham under 35 U.S.C. § 103

The Office Action ("Action") rejects claims 1-7 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pub. No. 2003/0223425 of Shenoy et al. ("Shenoy") in view of U.S. Patent No. 5,936,957 to Hartmann et al. ("Hartmann") and further in view of U.S. Pub. No. 2003/0126468 of Markham ("Markham"). Applicant traverses these rejections.

Independent claim 1 is directed to a system, and recites the following features (with emphasis added):

- a control card, comprising:
 - a control processor to execute a control portion of an exterior gateway protocol; and
 - a routing table of exterior gateway routes and devices;

a line card, comprising:
a line processor to execute an offload portion of an exterior gateway protocol; and
a communications port to allow termination of at least one communication link; and
a backplane to allow the control card and the line card to communicate, *wherein the line card is configured to filter mal-formed, illegal and duplicate update messages from gateway peers.*

The Action concedes at page 7 that Shenoy and Hartmann fail to teach or suggest at least “wherein the line card is configured to filter mal-formed, illegal and duplicate update messages from gateway peers,” as recited in independent claim 1. The Action then asserts that this feature is taught in Markham at paragraph [0065], lines 1-7, and paragraph [0117], lines 1-10. Applicant respectfully disagrees. For example, paragraph [0065] merely provides four different functions, discussed below, none of which can be construed as being “configured to filter mal-formed, illegal and duplicate update messages from gateway peers.” Paragraph [0117] merely describes policies to support redundancy, such as the use of Directory Services (DS), which “provide their own replication capability.”

The first function listed in paragraph [0065] of Markham focuses on “ISAKMP policy and key management” and “authentication, encryption, and decryption of IPSEC packets,” *see, e.g.,* paragraphs [0066]-[0072]. The second function focuses on “five options for each packet NIC 14 receives” and “filter rules [that] are based on data such as policy flags (allow, deny, audit, redirect, etc.), traffic direction, source IP address, an IP address mask and port range for the source IP address, destination IP address, an IP address mask and port range for the destination IP address, protocol, redirect address and port and audit thresholds and counts,” *see, e.g.,* paragraphs [0073]-[0081]. The third function focuses on “intrusion detection” such as “IP fragment overlap attacks, out-of-band data attacks, ping of death attacks, forged TCP connections and TCP attacks,” *see, e.g.,* paragraphs [0082]-[0087]. The fourth function focuses on “flow control” such as traffic and/or Type of Service prioritization, *see, e.g.,* paragraphs [0088]-[0092].

Consequently, Markham fails to cure the deficiencies of Shenoy and Hartmann because Markham does not teach or suggest at least “wherein the line card is configured to filter mal-formed, illegal and duplicate update messages from gateway peers.”

Because the combination of Shenoy, Hartmann, and Markham does not teach or suggest every feature recited in independent claim 1, the 35 U.S.C. § 103(a) rejection of independent claim 1 should be withdrawn and such action is respectfully requested.

Dependent claims 2-7 depend from independent claim 1 and should be allowed for at least the same reasons that pertain to the parent claim 1. Dependent claims 2-7 are also independently patentable. Therefore, the 35 U.S.C. § 103(a) rejections of dependent claims 2-7 should be withdrawn and such action is respectfully requested.

Claims 8, 10-14, 17-18, 25, and 27-34 are Patentable over Shenoy, Moberg, and Li under 35 U.S.C. § 103

The Action rejects claims 8, 10-14, 17-18, 25, and 27-34 under 35 U.S.C. § 103(a) as being unpatentable over Shenoy in view of U.S. Patent 6,697,872 to Moberg (“Moberg”) and further in view of U.S. Patent No. 7,233,567 to Li (“Li”). Applicant traverses these rejections.

Claims 8-14 and 17

Independent claim 8 is directed to a method of processing an exterior gateway protocol packet, and recites the following features (with emphasis added):

receiving an incoming packet at a line-card;
determining if the packet is valid;
parsing the packet to extract protocol data;
transmitting any control-relevant data to a control card; and
*generating message traffic at the line card for peer gateways including
announcing routes to the peer gateways.*

The Action concedes at page 13 that Shenoy and Moberg fail to teach or suggest at least “generating message traffic at the line card for peer gateways including announcing routes to the peer gateways,” as recited in independent claim 8. The Action then asserts that this feature is taught in Li at col. 5, lines 1-19. Applicant respectfully disagrees. For example, the cited portion of Li describes the line card 130 illustrated in Figure 3 of Li and provides that “[t]he RSP memory 330 [of the line card 130] is used to store the routing table” and that “[t]he core processor 310 [of the line card 130] provides management and control *for the line card 130*, and includes logic for *receiving the routing table* from the central controller 120 over the fast bus, *storing the routing table in the RSP memory 330 [of the line card 130]*, and *configuring the RSP*

320 [of the line card 130] based upon predetermined configuration information” (emphasis added). Neither the cited portion nor any other portion of Li teaches or suggests generating message traffic at a line card, let alone announcing routes to peer gateways.

Consequently, Li fails to cure the deficiencies of Shenoy and Moberg because Li does not teach or suggest at least “generating message traffic at the line card for peer gateways including announcing routes to the peer gateways.”

Because the combination of Shenoy, Moberg, and Li does not teach or suggest every feature recited in independent claim 8, the 35 U.S.C. § 103(a) rejection of independent claim 8 should be withdrawn and such action is respectfully requested.

Dependent claims 9-14 and 17 depend from independent claim 8 and should be allowed for at least the same reasons that pertain to the parent claim 8. Dependent claims 9-14 and 17 are also independently patentable. Therefore, the 35 U.S.C. § 103(a) rejections of dependent claims 9-14 and 17 should be withdrawn and such action is respectfully requested.

Furthermore, the cited art does not teach or suggest at least “determining if the packet is a mal-formed packet,” as recited in dependent claim 10. The Action proposes at page 12 that Moberg teaches this feature. However, as discussed in the Amendment filed on September 24, 2009 (“the previous Amendment”), Moberg does not teach anything pertaining to determining whether a packet is mal-formed. *Applicant notes that the Examiner has not directly responded to this previously-presented argument.* Accordingly, dependent claim 10 should be allowed over the cited art for at least these additional reasons.

In addition, the cited art does not teach or suggest at least “applying a packet filter to the packets,” as recited in dependent claim 11. The Action asserts at page 12 that Moberg teaches this feature because it teaches that, after validation, a packet is processed. Applicant respectfully disagrees. As discussed in the previous Amendment, Moberg does not teach or suggest that a packet filter is applied to the packet. *Applicant notes that the Examiner has not directly responded to this previously-presented argument either.* Accordingly, dependent claim 11 should be allowed over the cited art for at least these additional reasons.

Also, the cited art does not teach or suggest at least “applying an address filter to the packets,” as recited in dependent claim 12. The Action asserts at page 12 that Moberg teaches this feature because it teaches that a line card examines the address of a packet. Applicant respectfully disagrees. As discussed in the previous Amendment, Moberg does not teach that an

address filter is applied to the packet; rather, Moberg merely teaches that the line card examines the address to determine which card should process the packet, *see, e.g.*, col. 4, lines 49-53, as noted by the Action. *This is yet another previously-presented argument to which the Examiner has not directly responded.* Therefore, Moberg does not teach applying an address filter to a packet. Accordingly, dependent claim 12 should be allowed over the cited art for at least these additional reasons.

Additionally, the cited art fails to teach or suggest at least “transmitting data related to valid updates from the peer gateways,” as recited in dependent claim 13. The Action asserts at page 8 that Shenoy teaches this feature and directs attention to Shenoy at paragraph [0027]. Applicant respectfully disagrees. As discussed in the previous Amendment, the cited paragraph of Shenoy simply asserts that a line card can communicate with a control card and *does not describe the substance of such communication* and, because all of the described communications take place between operating systems in the same router, Shenoy does not teach or suggest “transmitting data related to valid updates from the peer gateways.” *The Examiner has not directly responded to this previously-presented argument.* Accordingly, dependent claim 13 should be allowed over the cited art for at least these additional reasons.

Claims 25 and 27-29

Independent claim 25 is directed to a method of establishing a control portion of a distributed exterior gateway protocol, and recites the following features (with emphasis added):

- initializing a control card;
- registering a control portion of a protocol to be executed by the control card with a central registration point;
- setting up control connections with line cards executing offload portions of the protocol;
- configuring the line cards including providing a routing table and policy data to each line card;* and
- performing central Border Gateway Protocol functions.

The Action concedes at page 13 that Shenoy and Moberg fail to teach or suggest at least “configuring the line cards including providing a routing table and policy data to each line card,” as recited in independent claim 25. The Action then asserts at page 14 that this feature is taught in Li at col. 5, lines 1-19. Applicant respectfully disagrees. For example as noted above, the cited portion of Li specifies that “[t]he core processor 310 [of the line card 130] provides

management and control *for the line card 130*, and includes logic for *receiving the routing table* from the central controller 120 over the fast bus, *storing the routing table in the RSP memory 330 [of the line card 130]*, and *configuring the RSP 320 [of the line card 130]* based upon predetermined configuration information” (emphasis added). Neither the cited portion nor any other portion of Li teaches or suggests providing a routing table and policy data to each line card.

Consequently, Li fails to cure the deficiencies of Shenoy and Moberg because Li does not teach or suggest at least “configuring the line cards including providing a routing table and policy data to each line card.”

Because the combination of Shenoy, Moberg, and Li does not teach or suggest every feature recited in independent claim 25, the 35 U.S.C. § 103(a) rejection of independent claim 25 should be withdrawn and such action is respectfully requested.

Dependent claims 27-29 depend from independent claim 25 and should be allowed for at least the same reasons that pertain to the parent claim 25. Dependent claims 27-29 are also independently patentable. Therefore, the 35 U.S.C. § 103(a) rejections of dependent claims 27-29 should be withdrawn and such action is respectfully requested.

Furthermore, the cited art fails to teach or suggest at least “registering the control portion with a distributed control plane architecture infrastructure module,” as recited in dependent claim 27. The Action asserts at pages 9 that Shenoy teaches this feature because it teaches a “distribution engine [that] manages the distribution of forwarding information at kernel space level” and directs attention to paragraph [0032] of Shenoy. Applicant respectfully disagrees. As discussed in the previous Amendment, and as acknowledged by the Action itself, the distribution engine of Shenoy manages “distribution of forwarding information” and, therefore, *it does not teach or suggest registration of the control portion of a protocol* and, because Shenoy does not teach or suggest any other elements that pertain to registration of the control portion of a protocol, Shenoy does not teach or suggest “registering the control portion with a distributed control plane architecture infrastructure module.” *The Examiner has not directly responded to this previously-presented argument.* Accordingly, dependent claim 27 should be allowed over the cited art for at least these additional reasons.

Claims 30-34

Claims 30-34 recite features that are similar to those discussed above with respect to claims 8-12, respectively, and are allowable for at least the same reasons presented above with respect to claims 8-12. Accordingly, the 35 U.S.C. § 103(a) rejections of claims 30-34 should be withdrawn and such action is respectfully requested.

Claims 18-22 and 24 are Patentable over Shenoy, Moberg, Li, and Ball under 35 U.S.C. § 103

The Action rejects claims 18-22 and 24 under 35 U.S.C. § 103(a) as being unpatentable over Shenoy in view of Moberg and Li and further in view of U.S. Pub. No. 2005/0074003 to Ball, et al. (“Ball”). Applicant traverses these rejections.

Independent claim 18 is directed to a method of establishing an offload portion of a distributed exterior gateway protocol, and recites the following features (with emphasis added):

- initializing a line card;
- registering an offload portion of a protocol to be executed by the line card with a central registration point;
- setting up a control connection with a control card;
- transmitting data resource data to the control card;*
- receiving configuration information from the control card;
- establishing connections with exterior gateway peers;
- performing Border Gateway Protocol functions at the line card, including running output policies for each of the gateway peers; and
- transmitting only valid Border Gateway Protocol data to the control card.*

The combination of cited references does not teach or suggest at least “transmitting data resource data to the control card,” as recited in independent claim 18. The Action asserts at page 16 that Shenoy teaches this feature because it teaches “forwarding information to control module” and directs attention to paragraph [0035], lines 1-7. Applicant respectfully disagrees. As discussed in the previous Amendment, Shenoy does not teach that data resource data is sent to the control card; rather, Shenoy specifically teaches that forwarding information is exchanged between the line cards and the control card and, therefore, Shenoy does not teach or suggest “transmitting data resource data to the control card.” *This is another previously-presented argument to which the Examiner has not directly responded.* Further, Moberg, Li, and Ball fail to cure this deficiency of Shenoy.

The combination of cited references also fails to teach or suggest at least “transmitting only valid Border Gateway Protocol data to the control card,” as recited in independent claim 18.

The Action asserts at page 16 that Shenoy teaches this feature because “protocols are implemented by control module” and directs attention to paragraph [0017], lines 9-16. Applicant respectfully disagrees. As discussed in the previous Amendment, the mere fact that Shenoy’s control modules can perform protocol implementation functions does not necessarily mean that the line cards transmit only valid BGP data to the control module and, in fact, paragraph [0017] of Shenoy actually teaches that the line cards transmit *many types of data* to the control module. Also discussed in the previous Amendment, Shenoy does not teach or suggest that the line cards *distinguish between valid and invalid data packets* in determining which data packets to forward to the control module and, therefore, Shenoy does not teach or suggest “transmitting only valid Border Gateway Protocol data to the control card.” *This is yet another previously-presented argument to which the Examiner has not directly responded.* Moberg, Li, and Ball also fail to cure this deficiency of Shenoy.

Accordingly, because the combination of Shenoy, Moberg, Li, and Ball does not teach or suggest every feature recited in independent claim 18, the 35 U.S.C. § 103(a) rejection of independent claim 18 should be withdrawn and such action is respectfully requested.

Dependent claims 19-22 and 24 depend from independent claim 18 and should be allowed for at least the same reasons that pertain to the parent claim 18. Dependent claims 19-22 and 24 are also independently patentable. Therefore, the 35 U.S.C. § 103(a) rejections of dependent claims 19-22 and 24 should be withdrawn and such action is respectfully requested.

Furthermore, the cited art does not teach or suggest at least “filtering mal-formed, illegal and duplicate update messages from the gateway peers,” as recited in dependent claim 21. While the Action asserts at page 17 that Moberg teaches this feature, Applicant submits that, as discussed in the previous Amendment and above, Moberg does not teach anything pertaining to “mal-formed, illegal and duplicate update messages from the gateway peers,” let alone filtering such messages. Accordingly, dependent claim 21 should be allowed over the cited art for at least these additional reasons.

Claim 15 is Patentable over Shenoy, Moberg, Li, and Harvey under 35 U.S.C. § 103

The Action rejects claim 15 under 35 U.S.C. § 103(a) as being unpatentable over Shenoy in view of Moberg and Li and further in view of U.S. Pub. No. 2003/0140167 to Harvey, et al. (“Harvey”). Applicant traverses this rejection.

Dependent claim 15 depends from independent claim 8 and should be allowed for at least the same reasons that pertain to the parent claim 8. Dependent claim 15 is also independently patentable. Therefore, the 35 U.S.C. § 103(a) rejection of dependent claim 15 should be withdrawn and such action is respectfully requested.

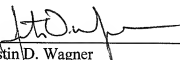
Furthermore, the combination of cited references does not teach or suggest at least “generating responses required by the incoming packets,” as recited in dependent claim 15. The Action asserts at page 19 that Harvey teaches this feature and directs attention to paragraph [0030] of Harvey. Applicant respectfully disagrees. As noted in the previous Amendment, the cited paragraph merely teaches that an acknowledgement message can be sent every time a packet is received at a routing module. *Harvey does not teach that such an acknowledgment message was required by the incoming packet* and, in fact, Harvey appears to teach that its system does not distinguish between incoming packets that require an acknowledgement and those that do not require an acknowledgement; therefore, Harvey does not teach or suggest “generating responses required by the incoming packets.” *The Examiner has not directly responded to this previously-presented argument.* Accordingly, dependent claim 15 should be allowed over the cited art for at least these additional reasons.

Conclusion

The present application is in condition for allowance and such action is respectfully requested.

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